L 14425-66 EWT(m)/EPF(n)-2/EWA(d)/EWP(t)/EWP(k)/EWP(z)/EWP(b) MJW/JD/WW/HW/JG

ACC NR: AP6002113 SOURCE CODE: UR/0369/65/001/006/0664/0669

62
59
13

AUTHOR: Chayevskiy, M.I.; Shatinskiy, V.F.

ORG: Physicomechanical Institute, AN Ukr SSR, L'vov (Fiziko-mekhanicheskiy institut AN Ukr SSR)

TITLE: Improving the performance of steels in melts of low-melting metals by methods of hardening technology

SOURCE: Fiziko-khimicheskaya mekhanika materialov, v. 1, no. 6, 1965, 664-669

TOPIC TAGS: steel, nonferrous liquid metal, metal property, lead, tin, bismuth

ABSTRACT: The effect of mechanical-thermal treatment (MTT) and high-temperature mechanical treatment (HTMT) of stress concentrators on the fatigue strength of 1Kh18N9T steel in Pb-Sn and Pb-Bi eutectic melts was studied. Tests showed that in air at room temperature the fatigue strength of samples with stress concentrators applied with rollers during MTT increased by 220% as compared to the fatigue strength of samples with ground concentrators. Samples subjected to temperature stabilization after deformation for 100 hr at 400, 500, and 600C did not show any appreciable change in fatigue strength, indicating that the factors determining the increase in strength arise

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L 14425-66

ACC NR: AP6002113

3

primarily in the course of deformation. Mechanical-thermal treatment (44,55,14) was found to be an effective means of improving the performance of 1Kh18N9T steel in Pb-Sn and Pb-Bi eutectics under cyclic loads, particularly around 500C. It is concluded that methods of hardening technology can be used to improve the performance of steel parts operating in contact with melts of low-melting metals despite the increase in the free energy of the steel as a result of work hardening. Orig. art. has: 3 figures.

SUB CODE: 11 / SUBM DATE: 05Jul65 / ORIG REF: 010

FW

Card 2/2

L 26039-66 EWT(m)/EWP(w)/EWA(d)/T/EWP(t) IJP(c) JD

ACC NR: AP6013898 SOURCE CODE: UR/0020/66/167/006/1287/1290

AUTHOR: Chayevskiy, M. I.; Shatinskiy, V. F.; Popovich, V. V.

ORG: Institute of Physics and Mechanics, Academy of Sciences, UkrSSR (Fiziko-mekhanicheskiy institut Akademii nauk UkrSSR)

TITLE: Adsorption reduction in the work capacity of steel specimens in contact with a melt, and the effect of gaseous impurities

SOURCE: AN SSSR. Doklady, v. 167, no. 6, 1966, 1287-1290

TOPIC TAGS: steel, fatigue strength, steel impurity, metal test, material deformation

ABSTRACT: The authors consider the long-term strength of various types of steel in lead-tin and lead-bismuth melts as contrasted with their strength in air and in a vacuum. Tests show that the long-term strength of Armco iron specimens is higher in air than in a vacuum. Tests in vacuum show less scatter in experimental data since the development of microscopic cracks in a vacuum is more uniform than this process in air. The durability of specimens in a melt is lower than in a vacuum since reliable wetting of the specimens by the melt before the tests is prevented by the formation of an oxide film on the surface of the specimens. For this reason, the oxygen from the melt penetrates easily into the steel. However, when the tests are conducted in a vacuum, the long-term strength of steel specimens in the melt is nearly the same as that of

Card 1/2 UDC: 669.1.539.(431+434)

L 26039-66

ACC NR: AP6013898

2

specimens in a vacuum up to a certain stress level. Above this critical stress, the melt penetrates into the metal causing embrittlement and a reduction in the short-term strength. The effect of oxygen in cyclic deformation of steel in melts is considered. It is found that the intermetallic films formed on the surface of steel by contact with the melt makes an effective barrier which protects the specimen from oxygenation. Orig. art. has: 4 figures.

SUB CODE: 11/ SUBM DATE: 27Jul65/ ORIG REF: 007/ OTH REF: 000

Card 2/2 PB

L 07704-67 EWT(m)/EWP(w)/EWP(t)/ETI IJP(c) JD/JG

ACC NR: AP6034192 (N) SOURCE CODE: UR/0369/66/002/005/0522/0525

61
59
B

AUTHOR: Chayevskiy, M. I.; Popovich, V. V.

ORG: Physicomechanical Institute, AN UkrSSR, Lvov (Fiziko-mekhanicheskiy institut AN UkrSSR)

TITLE: Preventing hydrogen embrittlement in parts coated with lithium during their rinsing in various solutions

SOURCE: Fiziko-khimicheskaya mekhanika materialov, v. 2, no. 5, 1966, 522-525

TOPIC TAGS: ~~metal~~ hydrogen embrittlement, iron ~~embrittlement~~, molybdenum ~~embrittlement~~, lithium, ~~coated~~ metal coating, lithium

ABSTRACT: Rinsing with water is an easy and economical method of cleaning parts working in contact with lithium, which have to be cleaned periodically. Water, however, reacts with lithium, producing atomic hydrogen, which readily diffuses into the metal and lowers its strength and, especially, its ductility. There are two ways of preventing the detrimental effect of hydrogen: use materials which are not susceptible to hydrogen embrittlement, or prevent hydrogen diffusion. It was established earlier that metals which form ideal solutions with hydrogen or solutions with a negative deviation from ideal ones are not susceptible to hydrogen embrittlement. Iron and molybdenum form solutions with positive deviation from the ideal, while niobium-hydrogen solutions show a negative deviation. Consequently, niobium is

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L 07794-67

ACC NR: AP6034192

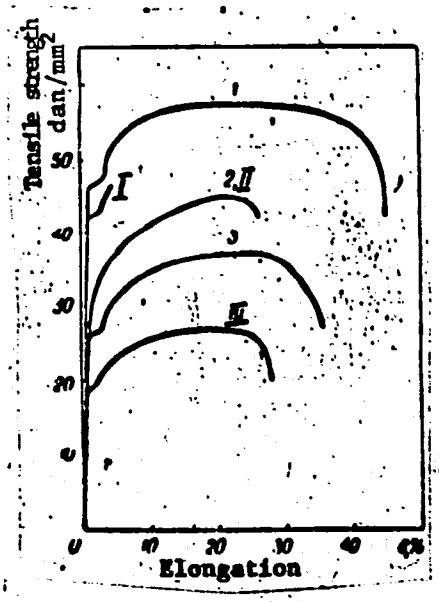

Fig. 1. Stress-strain diagram of molybdenum (1,I), niobium (2, II) and Armco iron (3, III) uncoated (1, 2, 3) and coated with lithium and rinsed with water (I, II, III)

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L 07794-67
ACC NR: AP6034192

not susceptible to hydrogen embrittlement, while molybdenum and iron are very susceptible (Fig. 1). The diffusion of hydrogen can be prevented by the use of rinsing media containing some strong oxidizers. For instance, a 30% aqueous solution of hydrogen peroxide prevents completely the adsorption of hydrogen by iron. This solution, however, is too strong for molybdenum, especially when intricately shaped parts must be rinsed. Molybdenum can be rinsed in potassium bichromate or potassium permanganate. Orig. art. has: 3 figures and 1 table.

SUB CODE: 11, 13/ SUBM DATE: 10May66/ ORIG REF: 005/ ATD PRESS: 5101

LS
Card 3/3

L 39043-66 EWT(m)/EWP(w)/EWP(j)/T/EWP(t)/ETI IJP(c) JD/WW/JW/JG/WE/DJ/RM

ACC NR: AP6020909 SOURCE CODE: UR/0369/66/002/002/0143/0148

AUTHOR: Chayevskiy, M. I.; Popovich, V. V.

ORG: Physicomechanical Institute, AN UkrSSR, L'vov (Fiziko-mekhanicheskiy institut AN UkrSSR)

TITLE: Evaluation of the action of corrosive media on the basis of thermodynamics of forming solutions

SOURCE: Fiziko-khimicheskaya mekhanika materialov, v. 2, no. 2, 1966, 143-148

TOPIC TAGS: metal deformation, liquid metal, thermodynamic characteristic, corrosion

ABSTRACT: The main criterion determining the action of a metallic melt on a deformed structural metal is the thermodynamic activity of the solvent metal. It is shown that the softening or hardening of the metal can be evaluated from data on the heats of mixing, free energy and entropy changes in the system, changes in the crystallization temperature, and also from melting point diagrams and the electronic structure of the interacting atoms. A series of thermodynamic characteristics of metals, combined with atomic characteristics, thus permits one to predict the changes in the strength of a structural metal acted upon by a liquid metal medium. Furthermore, by introducing a third component into the binary system, one can effect certain desired changes in the strength of the structural metal. A table is given which lists data on the deviation of solutions from ideality for deformed metal - melt binary systems, and presents

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L 39043-66
ACC NR: AP6020909

changes in the mechanical properties of solid metals caused by metallic melts. Orig. art. has: 1 table and 7 formulas.

SUB CODE: 11/ SUBM DATE: 14Oct65/ ORIG REF: 014/ OTH REF: 003

Card 2/2 mlp

ACC NR: AP6036366 SOURCE CODE: UR/0109/66/011/011/1927/1932

AUTHOR: Chayevskiy, Ye. V.

ORG: none

TITLE: Distribution of energy streams created by a system of random monochromatic sources

SOURCE: Radiotekhnika i elektronika, v. 11, no. 11, 1966, 1927-1932

TOPIC TAGS: VHF communication, SHF communication, VHF wave propagation, UHF wave propagation

ABSTRACT: R. H. Delano proved that, for a two-variate model, the angular distribution of energy streams is describable by the Student law with two degrees of freedom. However, the angular and modulo stream distributions are interdependent which necessitates a determination of the joint density of distribution;

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ACC NR: AP6036366

this problem is solved in the present article. For simplicity, the field of sound waves is considered; however, the results are held applicable to random sources (sea surface, tropospheric inhomogeneities, rain drops) of electromagnetic waves provided they are not polarized. The final formulas for distribution of intensity components and stream directions are:

$$W(t_x)=\frac{1}{2\mu_x\theta_x}\left[1+\frac{t_x^2}{\mu_x^2\theta_x^2}\right]^{-\mu_x},$$

$$W(t_y)=\frac{1}{2\mu_y\theta_y}\left[1+\frac{t_y^2}{\mu_y^2\theta_y^2}\right]^{-\mu_y},$$

$$W(P_0)=e^{-P_0}.$$

"In conclusion, the author wishes to thank L. Ye. Kopilovich for useful discussions."
Orig. art. has: 55 formulas.

SUB CODE: 17, 09 / SUBM DATE: 19Jun65 / ORIG REF: 002 / OTH REF: 001

Card 2/2

39241

S/141/62/005/002/001/025
E140/E435

3,1730

AUTHORS: Chayevskiy, Ye.V., Braude, S.Ya.

TITLE: On the low-frequency radio spectrum of the discrete source A Cassiopeia

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Radiofizika. v.5, no.2, 1962, 211-215

TEXT: Two models for explaining the observed spectrum of the discrete source A Cassiopeia are discussed. The particular features under consideration are the exponential decrease above 50 Mc/s, proportional to $f^{-0.8}$, and the practically constant intensity between 12 and 30 Mc/s. A.C.B.Lowell, H.W.Wells and R.J.Lamden (Monthly Notices Roy. Astron. Soc., v.121, 1960, 111; Phil. Mag., v.8, 1956, 1725) proposed a model now generally accepted to explain these features, essentially that of selective absorption in ionized hydrogen of the energy radiated by electrons in vacuum. An alternative model is proposed here, according to which electrons radiating in a medium with refractive index different from unity would give a spectrum close to that observed

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S/141/62/005/002/001/025
E140/E435

On the low-frequency radio ...

(without the hypothesis of the ionized hydrogen layer). The first model gives an integral relation between the density of free electrons in a layer and the thickness of the layer; the new model gives a local relationship between the free-electron density and the magnetic field intensity in the source. It is necessary to carry out observations below 10 Mc/s to be able to decide between the two models. If, however, it is found that H/N_e is less than 3×10^5 for the source, the difference of the index of refraction from unity can be neglected. There are 2 figures.

ASSOCIATION: Institut radiofiziki i elektroniki AN UkrSSR
(Institute of Radiophysics and Electronics AS UkrSSR)

SUBMITTED: August 10, 1961

Card 2/2

CHAYK, Valentina Vasil'yevna.

Leningrad Sci Res Tuberculosis Inst. Academic degree of Doctor of Medical Sciences, based on her defense 10 December 1954, in the Council of Leningrad Sanitary-Hygienic Medical Inst, of herdissertation entitled: "Experiment on the Objective Evaluation of Cholinergetic Processes in Tuberculosis."

Academic degree and/or title: Doctor of Sciences

SO: Decisions of VAK, List no. 12, 28 May 55, Byulleten' MVO SSSR, No. 15, Aug 56, Moscow, pp. 5-24, Uncl. JPRS/NY-537

FEDOROV, A.; CHAYKA, A.; MATYUKOV, N.

Training specialists. Avt.transp. 42 no. 4:48-49 Ap '64.
(MIRA 17:5)

1. Direktor Makhachkalinskoy avtoshkly (for Fedorov).

CHAYKA, A.I.

Fourth plenum of the Sverdlovsk Province Administration of the Scientific Technological Society of Ferrous Metallurgy. Ogneupory 30 no.1:47 '65. (MIRA 18:3)

1. Vostochnyy institut ogneuporov.

FEDORCHENKO, I.M.; CHAYKA, B.I.; NEVEL'SHTEYN, Ya.G.; SHAFORENKO, M.A.; BARBANEL', Ya.Ye.

Comparative testing of ceramic metal piston rings on tractor engines. (MIRA 18:10)
Porosh.met. 4 no.5:92-97 S-O '64.

1. Institut problem materialovedeniya AN UkrSSR i Spetsial'noye konstruktorskoye tekhnologicheskoye byuro Odesskogo zavoda zapasnykh chastey.

FEDORCHENKO, I.M.; CHAYKA, B.I.

Investigation of the mechanical properties of powder metal steels obtained by sintering mixtures of iron and graphite powders. Poroshk. met. 5 no.1:45-51 Ja '65. (MIRA 18:10)

1. Institut problem materialovedeniya AN UkrSSR.

(A) L 13267-66 EWP(e)/EWT(m)/EWP(w)/T/EWP(t)/EWP(k)/EWP(z)/EWP(b)/EWA(c)

ACC NR: AP6001478 JD/WW/DJ/WH SOURCE CODE: UR/0226/65/000/012/0079/0082

AUTHOR: Chayka, B. I.; Fedorchenko, I. M.; Vologdin, V. V.

ORG: Institute of Materials Research, AN UkrSSR (Institut problem materialovedeniya AN UkrSSR); Scientific Research Institute of High-Frequency Currents (Nauchno-issledovatel'skiy institut tokov vysokoy chastoty)

TITLE: Sintering of powdered-metal piston rings by means of induction heating

SOURCE: Poroshkovaya metallurgiya, no. 12, 1965, 79-82

TOPIC TAGS: powder metal, antifriction material, piston ring, powder metal sintering, induction furnace, pearlite

ABSTRACT: The Institute of Materials Research AN UkSSR has developed a Fe-base antifriction material (1.35% graphite, 2% Cu, 4% ZnS) for the production of piston rings for internal combustion engines. When sintered in an electric muffle furnace at 1180°C for 2 hr, these powdered-metal rings are 1.5 times as strong and elastic as rings of gray cast iron. To speed up the sintering process, the rings began to be sintered in an L3-13 induction heating installation (10 kw) at a frequency of 300-450 cps in an air atmosphere, on optimizing the graphite content of the charge (1.5-1.75%) so as to assure obtaining a material with wear-resistant pearlitic structure. It was ex-

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L 13267-66

ACC NR: AP6001478

perimentally established that the optimal sintering time is 35-40 sec (I_{system} = 0.2 a, I_{anode} = 0.9 a, U_{heater} = 7 v). Orig. art. has: 2 tables, 4 figures.

SUB CODE: 11, 20/ SUBM DATE: 12May65/ ORIG REF: 003/ OTH REF: 000

Card 2/2

KALISH, Samuil Ionovich; NAYDENKO, Ivan Samoylovich; CHEBANENKO, Konstantin Ivanovich; SUPRUNOV, Vitaliy Fedorovich; CHAYKA, Boris Nikolayevich; PETRAKOV, Aleksandr Ivanovich; DOMANSKIY, Yuzef Gilyar'yevich; MALAKHOV, S.N., retsenzent

[Assembly, operation, and repair of hoisiting equipment] Montazh, ekspluatatsiia i naladka pod"emnykh ustanovok. [By] S.I.Kalish i dr. Moskva, Nedra, 1964. 446 p. (MIRA 18:3)

CHIZHKOV, B., tokar'; VERGEYCHIK, A., tokar'; SMIRNOV, M.; KRASOVSKIY, N.; SHITYKO, P.; CHAYKA, D.; MAZURENKO, P.

Same conditions bring different results. Okhr. truda i sots. strakh. no.1:30-33 Jl '58. (MIRA 11:12)

1.Instrumental'nyy tsekh Minskogo podshipnikovogo zavoda (for Chizhkov, Vergeychik). 2.Starshiy inzhenner po tekhnike bezopasnosti Minskogo podshipnikovogo zavoda (for Smirnov). 3.Sekretar' redaktsii zavodskoy mnogotirazhki "Za tekhnicheskiy progress" Minskogo podshipnekovogo zavoda (for Krasovskiy). 4.Glavnyy tekhnicheskiy inspektor Belsovprofa (for Shityko). 5.Spetsial'nyy korrespondent zhurnala Vsesoyuznogo tsentral'nogo soveta profsoyuzov "Okhrana truda i sotsial'noye strakhovnaiye" (for Mazurenko).
(Minsk--Industrial hygiene)

L 32689-65 EPF(c)/EPF(n)-2/EPR/EWG(j)/EPA(s)-2/EPA(w)-2/EWP(k)/EWT(m)/EWP(b)/T/EWA(d)/EWP(e)/EWP(w)/EWP(t) Pf-4/Pr-4/Ps-4/Pt-10/Pu-4/Pab-10 IJP(c) HW/WW/JD/JG

ACCESSION NR: AP5004439 S/0226/65/000/001/0045/0051

AUTHOR: Fedorchenko, I.M.; Chayka, B.I.

TITLE: Mechanical properties of cermet steels obtained by sintering mixtures of iron and graphite powders

SOURCE: Poroshkovaya metallurgiya, no. 1, 1965, 45-51

TOPIC TAGS: powder metallurgy, cermet steel, steel mechanical property, sintered steel, iron powder, carbon burnup, steel heat treatment

ABSTRACT: A study of the properties of steel samples made by sintering mixtures of iron powder with graphite or carbon black showed the possibility of obtaining a structural material that is stronger than materials made from pure sintered iron not hardened by carbon. Values of the strength and plasticity of the new material are estimated as a function of porosity and certain technological factors. The highest values of the mechanical properties were found in a material of 12% porosity containing 1.0% graphite in the initial state and sintered at 1200C. When carbon is introduced into the initial sintering mixture in the form of graphite or carbon black, the burning up of the latter and its activity must be taken into account. The sintering medium was found to have a

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L 32689-65
ACCESSION NR: AP5004439

substantial effect on the degree of burnup of the carbon introduced into the mixture. A good medium is reformed natural gas, which reduces the burning up of carbon, as opposed to hydrogen. For industrial applications, an iron powder containing 0.9% graphite is recommended. The sintering should be carried out at 1100-1200C, and if it is necessary to improve the mechanical properties, hardening with high-temperature tempering is recommended. Orig. art. has: 8 figures and 2 tables.

ASSOCIATION: Institut problem materialovedeniya AN UkrSSR (Materials Science Institute, AN UkrSSR)

SUBMITTED: 16Jan64 ENCL: 00 SUB CODE: MM

NO REF SOV: 002 OTHER: 012

Card 2/2

CHAIKA, G. I.

Motornyi greifer dlia mostovogo krana gruzopod"emnost'iu 5 t. (Vestn. Mash., 1951, no. 3, p. 10-12)

Motor grab for a travelling crane with a 5 t. hoisting capacity.

DLC: TN.4V4

SO: Manufacturing and Mechanical Engineering in the Soviet Union, Library of Congress, 1953.

CHAYKA, G. I.

Cranes, Derricks, Etc.

Monorail bucket lift, type TMG-201., Mekh. trud, rab., 6, No. 1, 1952.

Monthly List of Russian Accessions, Library of Congress, April 1952. Unclassified.

CHAYA, G. I.

1. CHAYA, G. I., Eng.

2. USSR (600)

4. Cranes, Derricks, etc.

7. Cupola cranes, Vest. mash., 32, No. 7, 1952.

9. Monthly List of Russian Accessions, Library of Congress, February, 1953. Unclassified.

1. CHAYKA, G. I., Eng.

2. USSR (600)

4. Cranes, Derricks, etc.

7. Revolving (turret) electric bridge crane, Vest. mash., 32, No. 8, 1952.

9. Monthly List of Russian Accessions, Library of Congress, February, 1953. Unclassified.

SOV/124-57-8-9499

Translation from: Referativnyy zhurnal. Mekhanika, 1957, Nr 8, p 132 (USSR)

AUTHOR: Chayka, G. I.

TITLE: The Lateral Stability of Circular Support Timbering Used in Mine Shafts (Poperechnaya ustoychivost' shakhtnoy krepi krugloy formy)

PERIODICAL: V sb.: Issledovaniya po shakhtnomu str-vu. Moscow, Ugletekhizdat, 1956, pp 132-143

ABSTRACT: Bibliographic entry

Card 1/1

SOV/124-57-8-9498

Translation from: Referativnyy zhurnal. Mekhanika, 1957, Nr 8, p 132 (USSR)

AUTHOR: Chayka, G. I.

TITLE: On the Stability Analysis of Circular-mine-shaft Support Timbering (O proverke krepi stvolov kruglogo secheniya na ustoychivost')

PERIODICAL: Shakhtnoye str-vo, 1957, Nr 2, pp 17-19

ABSTRACT: Bibliographic entry

Card 1/1

CHAYKA, G.I., inzh.

Design of thick-walled sectional lining. Shakht.stroi. no.6:20-21 Je '59. (MIRA 12:9)
(Shaft sinking) (Precast concrete construction)
(Mine timbering)

CHAYKA, G.M.

Specialists with a broad background are needed. Nauka i pered.op. v sel'khoz.7 no.1:78 Ja '57. (MLRA 10:2)

1. Glavnyy agronom Vil'manskoy Mashino-traktornoy stantsii, Mogilevskaya oblast'.
(Agricultural education)

MUSAYEV, Karim Yusupdzhanovich; MUZAFAROV, A.M., akademik, otv.red.; CHAYKA, G.V., red.; GOR'KOVAYA, Z.P., tekhn.red.

[Algae of irrigated soils and their effect on soil fertility] Vodorosli oroshaemykh zemel' i ikh znachenie dlia plodorodiia pochv. Tashkent, Izd-vo Akad.nauk Uzbekskoi SSR, 1960. 211 p. (MIRA 13:12)

1. AN UzSSR (for Muzafarov).
(Algae) (Soil fertility)

PAVLOVA, O.N., prof., zasl. deyatel' nauki, red.; CHAYKA, G.V., red.; TSAY, A.A., tekhn. red.

[Peptic ulcer under the climatic conditions in Uzbekistan] IAzvennaia bolezn' v usloviiakh klimata Uzbekistana; sbornik nauchnykh rabot. Pod red. O.N.Pavlovoi. Tashkent, Medgiz UzSSR, 1961. 173 p. (MIRA 15:6)

1. Tashkent. Meditsinskiy institut. Sanitarno-gigiyenicheskiy fakul'tet. Kafedra gospital'noy terapii.
(UZBEKISTAN--PEPTIC ULCER)

SHAMSUTDINOV, N.K.; CHAYKA, G.V., red.; TSAY, A.A., tekhn. red.

[Medicinal leech] Meditsinskaia piiavka. Tashkent, Medgiz, UzSSR, 1963. 12 p. (MIRA 16:10)

(LEECHES)

METSKAN, T.I.; KHAMIDOV, G.K.; SULTANOV, Sh.A.; NUGMANOVA, R.N.; CHAYKA, G.V., red.; AGZAMOV, K., tekhn. red.

[Clinical and laboratory significance of some metabolic processes in infectious hepatitis] Kliniko-laboratornoe znachenie nekotorykh obmennykh protsessov pri infektsionnom gepatite. Tashkent, Medgiz UzSSR, 1963. 108 p. (MIRA 16:12)

1. Sotrudniki kafedry infektsionnykh bolezney Tashkentskogo instituta usovershenstvovaniya vrachey (for Metskan, Nugmanova).
(HEPATITIS, INFECTIOUS) (METABOLISM, DISORDERS OF)

D'YAKONOVA, N.N.; MADZHIDOV, V.M., doktor med. nauk, otv. red.; CHAYKA, G.V., red.

[Clinical aspects of brucellosis in children] Klinika brutselleza u detei. Tashkent, Medgiz UzSSR, 1964. 154 p. (MIRA 17:9)

ASTRINSKIY, Samuil Davydovich, doktor med. nauk, prof.; KOGAN, Abram Aronovich, zasl. deyatel' nauk UzSSR, doktor med. nauk, prof.; CHAYKA, G.V., red.

[Prevention and treatment of hemorrhages in labor] Profilaktika i terapiia krovotechenii v rodakh. Tashkent, Izd-vo "Meditsina UzSSR, 1964. 184 p. (MIRA 18:2)

CHAYKA, G.V.; KABANOVSKIY, L.N.

Diamond grinding of hard-alloy draw plates. Mashinostroitel' no.10:18-19 O '64. (MIRA 17:11)

CHAYKA, G.V.

Diamond thread grinding. Mashinostroitel' no.10:29-30 O '64.
(MIRA 17:11)

KABANOVSKIY, L.N., inzh.; CHAYKA, G.V., inzh.; IZAKOV, R.P., inzh.

Diamond machining of hard-alloy drawing tools. Mashinostroenie no.5:21-23 S-O '65. (MIRA 18:9)

CHAYKA, G.V., inzh.; KHVOROSTETSKIY, V.I., inzh.

Diamond centerless lapping of hard-alloy pin gauges. Mashinostroenie no.5:23-24 S-O '65. (MIRA 18:9)

24.2700
26.2531

S/181/62/004/005/013/055
B104/B108

AUTHORS: Tolpygo, K. B., and Chayka, G. Ye.

TITLE: Thermionic emission of ionic semiconductors in strong fields

PERIODICAL: Fizika tverdogo tela, v. 4, no. 5, 1962, 1146 - 1153

TEXT: Thermionic emission of a semiconducting cathode with consideration of the variation in electron concentration and electron temperature under the influence of an external field is calculated in a simple approximation as in experimental conditions the anode current is assumed to heat the semiconductor. Because of the increased electron concentration and conduction in the surface layer of the semiconductor, heating of the electron gas has little effect on the results in the conventional methods of measuring thermionic emission. Heating of the electron gas has to be considered only in semiconductors with a high electron mobility and if current is very strong. In this case, calculation confirms the results of S. M. Levitin (Tr. Soveshch. po katod. elektron., Kiyev, 1959. Izd. AN USSR, Kiyev, 1952; ZhTF, 23, 1700, 1953; ZhTF, 23, 2159, 1953) who

Card 1/2

established the existence of a second region of space charge. Besides, this a "stripping" and a rapid increase of the emission current are possible if the anode voltage reaches a given value. There are 3 figures and 1 table.

ASSOCIATION: Kiyevskiy gosudarstvennyy universitet im. T. G. Shevchenko (Kiyev State University imeni T. G. Shevchenko)

SUBMITTED: December 15, 1961

S/0181/64/006/005/1476/1484

ACCESSION NR: AP4034933

AUTHORS: Tolpy*go, K. B.; Chayka, G. Ye.

TITLE: Distortion of the distribution function of electrons in a semiconductor by the discharge of thermocurrent and the effect of this current on the value of thermionic emission

SOURCE: Fizika tverdogo tela, v. 6, no. 5, 1964, 1476-1484

TOPIC TAGS: distribution function, semiconductor, thermocurrent, thermionic emission, Milne problem, Richardson function, work function

ABSTRACT: All works on thermionic emission have assumed that the distribution function of electrons in a semiconductor differs little from spherical symmetry. Actually, this is true only at distances from the surface large in comparison with the mean free path. The authors have examined changes in the distribution function near the surface of the semiconductor as caused by thermionic emission removing the fastest electrons. The problem is solved by a kinetic equation with boundary conditions within and at the surface of the semiconductor, in analogy with the Milne problem. The distribution function of electrons was found according to energies, angles of emission, and values of thermocurrent

Card 1/2

ACCESSION NR: AP4034933

on the assumption of small drift velocity of electrons as compared with the thermal velocity. The saturation current proves to be greater than that given by the Richardson function, and this drift increases with decrease in the work function. Orig. art. has: 41 formulas.

ASSOCIATION: Kiyevskiy gosudarstvenny*y universitet im. T. G. Shevchenko (Kiev State University)

SUBMITTED: 06Dec63

DATE ACQ: 20May64

ENCL: 00

SUB CODE: EC,SS

NO REF SOV: 002

OTHER: 002

Card 2/2

L 24158-65 EPF(n)-2/EPA(w)-2/EWA(h)/EWG(k)/EWI(1)/EWA/EPA(sp)-2/T Pu-4/Pz-6/Pab-10/
ACCESSION NR: AP4048869 Peb IJP(c) ATS/0185/64/009/010/1137/1139

AUTHOR: Chayka, G. Ye.

TITLE: Effect of strong fields on thermionic emission in semiconductors

SOURCE: Ukrayins'ky*y fizy*chny*y zhurnal, v. 9, no. 10, 1964, 1137-1139

TOPIC TAGS: thermionic emission, semiconductor, strong electric field, acoustical lattice vibration, optical lattice vibration

ABSTRACT: In a previous paper by the author and K. B. Tolpy*go (Fizika tverdogo tela 4, 11439 (1962)), the effect of the field on the change of concentration of the electrons at the cathode, and the heating of the electron gas were considered simultaneously. The scattering of electrons on optical vibrations of the lattice was computed, and the interaction was found to result in a Maxwellian distribution. In the present paper, the scattering of electrons on the acoustical and optical vibrations of the lattice is discussed under consideration of the nonuniformity of the field. "The author is grateful to Prof. K. B. Tolpy*go for his

Card 1/2

L 24158-65

ACCESSION NR: AP4048869

interest." Orig. art. has: 1 figure and 6 equations

ASSOCIATION: Kiyivs'kyy derzhuniversytet im. T. G. Shevchenka (Kiyev State University)

SUBMITTED: 16Apr64 ENCL: 00

SUB CODE: EC, SS, NO REF SOV: 007 OTHER: 000

Card 2/2

TOLPYGO, K.B.; CHAYKA, G.Ye.

Distortion of the electron distribution function in a semiconductor by thermal current separation and its effect on the magnitude of thermionic emission. Radiotekh. i elektron. 10 no.1:199-201 Ja '65. (MIRA 18:2)

1. Kiyevskiy gosudarstvennyy universitet im. T.G. Shevchenko.

L 58930-65 EWA(h)/EWT(1)/T Pz-6/Peb IJP(c) AT

ACCESSION NR: AP5015814 UR/0109/65/010/006/1115/1122
621.385.7:537.583

AUTHOR: Chayka, G. Ye.

TITLE: The influence of strong fields on the thermoelectron emission from semiconductors

SOURCE: Radiotekhnika i elektronika, v. 10, no. 6, 1965, 1115-1122

TOPIC TAGS: semiconductor, thermoelectron emission, lattice vibration, electron gas, space charge, thermal emf, thermoelectron

ABSTRACT: This work is a restatement of an earlier paper (Tolpygo, K. B., and G. Ye. Chayka, FTT, 4, 5, 1962, 1146-1153) which described the thermoelectron emission from a semiconductor cathode in a strong electric field, taking into account the changes of concentration and temperature. It is confirmed that, as was shown previously, at increasing field intensities the concentration of electrons on the surface of semiconductors rises more rapidly than the temperature of the electron gas. This disparity may lead to the phenomenon of a "second space-charge region," predicted by S. M. Levitin (Tr. Soveshch. po katod. elektron., Kiev, 1952, izd. AN USSR, 1952; ZhTF, 1953, 23, 10, 1700; 1953, 23, 12, 2159), which takes place when the current, after reaching quasi-saturation, again becomes space-charge limited.

Card 1/2

L 58930-65

ACCESSION NR: AP5015814

The present work involes a more rigorous treatment based on the solution of the Boltzmann kinetic equation along with the Poisson equation, which relates the value of the field to the concentration of electrons. Interactions with acoustic and optical phonons are taken into account. Orig. art. has: 23 formulas. [ZL]

ASSOCIATION: Kiyevskiy gosudarstvennyy universitet im. T. G. Shevchenko (Kiev State University)

SUBMITTED: 13Mar64 ENCL: 00 SUB CODE: EC, EM

NO REF SOV: 009 OTHER: 002 ATD PRESS: 4051

Card 2/2

L 4538-66 EWT(l)/T/EWA(h) IJP(c) AT

ACCESSION NR: AP5020690 UR/0185/65/010/008/0854/0860

AUTHOR: Chayka, H. Ye. (Chayka, G Ye.)

TITLE: Distribution function of minority carriers in semiconductors in the case of a strong spatial inhomogeneity

SOURCE: Ukrayins'kyy fizychnyy zhurnal, v. 10, no. 8, 1965, 854-860

TOPIC TAGS: minority carrier, distribution function, Green function, recombination coefficient, conduction band

ABSTRACT: A strong spatial inhomogeneity due to intense absorption of minority carriers is considered. The problem of finding the distribution function of minority carriers reduces to solving the kinetic equation which includes terms due to scattering by the acoustic vibrations of the lattice, and a term due to carrier absorption. It is assumed that the recombination coefficient has a maximum at zero energy (at the bottom of the electron conduction band). Because of the small change of the energy in the interaction of electrons with acoustic lattice vibrations, the distribution function is represented

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L 4538-66

ACCESSION NR: AP5020690

6

only by the zeroth and first Legendre polynomials. The classical Green's function method is used to solve the kinetic equation. The diffusion coefficient, the average lifetime, and the rate of surface recombination are found by averaging the distribution function over the energy. These coefficients depend on the recombination rate and on the energy lost in one interaction. The diffusion coefficient and the mean lifetime turn out to be functions of the coordinate. The functions are smoother than the distribution function. 'In conclusion I consider it my pleasant duty to express my gratitude to Professor K. B. Tolpygo for directing this work.' Orig. art. has: 26 formulas

44 55

ASSOCIATION: Kyyivs'kyy derzhuniversytet im. T. H. Shevchenko [Kiyevskiy gosudarstvennyy universitet im. T. G. Shevchenko] (Kiev State University)

44,55

SUBMITTED: 18Dec64 ENCL: 00 SUB CODE: SS

NR REF SOV: 003 OTHER: 002

OC

Card 2/2

L 13126-66 EWT(l)/T/EWA(h) IJP(c) AT

ACC NR: AP5028921 SOURCE CODE: UR/0185/65/010/011/1187/1196

AUTHOR: Chayka, H. Ye. (Chayka, G. Ye.)

ORG: Kiev State University im. T. G. Shevchenko (Kyyivs'kyy derzhuniversytet)

TITLE: Distribution function of minority current carriers in semiconductors in the case of strong spatial inhomogeneity arising in strongly absorbing films and with strong surface recombination

SOURCE: Ukrayins'kyy fizychnyy zhurnal, v. 10, no. 11, 1965, 1187-1196

TOPIC TAGS: distribution function, semiconductor carrier, surface property, electron recombination

ABSTRACT: The behavior is considered of minority current carriers in semiconductors with small carrier lifetimes when electrons (holes) with arbitrary energies recombine. The large current gradients appearing in this case make the representation of the distribution function by only the first two Legendre polynomials incorrect. When the energy of the electron gas enters in the kinetic equation as a parameter, and not as an independent variable, the kinetic equation becomes similar to the kinetic equation for the photons in the problem of the scattering of light by turbid atmospheres. By applying the methods used to solve the

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ACC NR: AP5028921

kinetic equation in astronomy problems, the reflection and transmission coefficients are obtained for a plate of finite thickness; these are equivalent to a determination of the distribution function on the surfaces of the plate. The case is also considered when the absorption of the carriers takes place only on the surface of the semiconductor, the surface determining the current and the field necessary for maintaining within the semiconductor a current corresponding to the current across the surface. It is shown that the use of the usual representation of the distribution function in the form $f = f_0 + \mu f_1$ leads to an error by a factor of 2.35. Author thanks Professor K. B. Tolpygo for guiding this work. Orig. art. has: 24 formulas and 1 table.

SUB CODE: 20/ SUBM DATE: 18Dec64/ NR REF SOV: 002/ OTH REF: 002

Card 2/2 HW

L 36328-66 EWT(1)/T IJP(c) AT

ACC NR: AP6015782 (A,N) SOURCE CODE: UR/0048/66/030/005/0850/0853

AUTHOR: Tolpygo, K. B.; Chayka, G. Ye. 53 B

ORG: Kiev State University im. T.G.Shevchenko (Kiyevskiy gosudarstvennyy universitet)

TITLE: Distortion of the electron distribution function in a semiconductor 21 by the thermionic emission current /Report, Twelfth All-Union Conference on the Physical Bases of Cathode Electronics held in Leningrad 22-26 October 1965/ 21

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 5, 1966, 850-853

TOPIC TAGS: thermionic emission, semiconductor crystal, Richardson equation, electron distribution, kinetic equation

ABSTRACT: The authors improve their earlier calculation (Fizika tverdogo tela, 6, 1476 (1964)) of the correction due to the asymmetry of the electron distribution function to the Richardson formula for a semiconductor in order to take into account also the distortion of t e electron energy distribution and the difference between the effective masses of the electron in the semiconductor and in the vacuum. The following three lengths are involved in the problem: the electron mean free path for momentum (direction) change; the electron mean free path for energy change (interaction with the lattice); and the Debye screening distance. These lengths are assumed to differ greatly from each other and to increase in the order in which they are mentioned above.

Card 1/2

L 36328-66

ACC NR: AP6015782

The region of the thermionic emitter near the surface is divided into three zones whose thicknesses correspond to the above-mentioned lengths. The electron wave functions are treated in the effective mass approximation and approximate solutions of the kinetic equation in the different regions are suitably joined at the boundaries. It is concluded that the thermionic current as given by the Richardson formula shoule be multiplied by the following correction factor: $(m_0/m)(1 + 3m_0/2Km)(1 - M/6Km)^{1/2}(3m_0/2Km))$, where m and m_0 are the effective masses of the electron in the crystal and in vacuum, respectively, M is the ratio of kT to the square of the velocity of sound, and K is the ratio of the work function to kT. This formula is valid for large values (>10) of K. Orig. art. has: 8 formulas and 1 figure.

SUB CODE: 20/ SUBM DATE: 00/ ORIG REF: 006/ OTH REF: 000

Card 2/2

CHAYKA, I.B.

Meteorologic regime of winters unfavorable for the wintering of farm crops in the Ukraine. Trudy UkrNIGMI no.52:77-87 '65.
(MIRA 18:10)

SOV/126-7-1-12/28

AUTHORS: Kuleshov, P.I. and ~~Chayka, I.I.~~

TITLE: The Nature and Mechanism of Formation of a Surface Layer in Carbon Steel Containing Arsenic (O prirode i mekhanizme obrazovaniya poverkhnostnogo sloya na uglerodistoy stali s primes'yu mysh'yaka)

PERIODICAL: Fizika Metallov i Metallovedeniye, Vol 7, Nr 1, pp 91-94 (USSR)

ABSTRACT: In papers by Sandler et al. (Ref.1) and Nikitina (Ref.2) it was shown that during high temperature oxidation of carbon steel and iron containing arsenic, the concentration of arsenic in the metal surface layer next to the scale increases considerably. In arsenious steel this phenomenon has only recently been discovered. In particular, the nature of the metal surface layer which becomes enriched in arsenic has so far been unknown. Hence, this article is devoted to this subject. The authors of this paper studied the surface layer in two steels of different arsenic content and approximately the same content of other components (see Table 1). The specimens were annealed at
Card 1/4 950 and 1100°C in an atmosphere of room air. In Fig.1a

The Nature and Mechanism of Formation of a Surface Layer in Carbon Steel Containing Arsenic

and b the microstructure of the surface layer obtained in specimens containing 0.127 and 0.204% As after oxidation at 1100°C is shown. From these photographs it can be seen that the surface is completely decarburised, and below the scale there is a uniform light-coloured layer which is separated from the base metal (ferrite) by a sharp boundary. On ageing in a 10% alcoholic solution of iodine the layer becomes dark, whereas the under-layer of ferrite remains light (see Fig.2a). Such difference in colour indicates a higher arsenic content in the layer, as well as a sharp change in arsenic concentration in the layer-metal boundary. The colour of ferrite becomes darker the further away from the boundary it is. Hence, the arsenic concentration gradually increases with distance from the boundary. In Table 2 lattice parameters of ferrite in the outer surface layer and at depths of 0.02 and 0.06 mm for a steel containing 0.204% arsenic are shown; from this the arsenic concentration has been calculated. From the above results the following conclusions have been derived:

The Nature and Mechanism of Formation of a Surface Layer in Carbon Steel Containing Arsenic

(1) The thin surface layer which forms in carbon steel containing a small quantity of arsenic as a result of high temperature oxidation is a solid solution of arsenic in ferrite.
(2) A layer of arsenious ferrite forms as the result of segregation of arsenic in a thin austenite layer adjacent to the scale and the subsequent $\gamma \rightarrow \alpha$ phase recrystallisation. On further oxidation the layer grows in thickness due to diffusion of arsenic from the surface into the depth of the metal. (3) The accumulation of arsenic before the front of the wüstite layer, and not in the wüstite layer itself, appears to be due to arsenic not being soluble in wüstite. In such a case the arsenic concentration of the surface layer of the metal must increase due to removal of iron ions into the scale, as well as removal of arsenic from the specimen surface into the depth by the growing wüstite layer.

 There are 2 figures, 2 tables and 8 Soviet references.

SOV/126-7-1-12/28

The Nature and Mechanism of Formation of a Surface Layer in Carbon Steel Containing Arsenic

ASSOCIATION: Donetskiy industrial'nyy institut imeni N.S. Khrushcheva (Donetskiy Industrial Institute imeni N.S. Khrushchev)

SUBMITTED: March 23, 1957

Card 4/4

AMSTISLAVSKIY, D.M.; CHAYKA, I.I.

Selecting the places for taking samples of combustion products. Koks i khim. no.9:21-24 '60. (MIRA 13:9)

1. Zhdanovskiy koksokhimicheskiy zavod.
(Coke ovens)

CHAYKA, I.K.

Effect of corn kernel wetting on their physicomechanical properties. Izv.vys.ucheb.zav.; pishch.tekh. no.1:79-81 '64. (MIRA 17:4)

1. Odesskiy tekhnologicheskiy institut imeni Lomonosova, kafedra tekhnologii zerna.

CHAYKA, I. M.

CHAYKA, I. M. -- "EFFECT OF THERMAL CONDITIONS OF CASTING ON THE CHARACTER OF THE FIRST STAGE OF GRAPHITIZATION, STRUCTURE, AND MECHANICAL PROPERTIES OF MALLEABLE IRON." SUB 15 APR 52, INST OF METALLURGY IMENI A. A. BAYKOV, ACAD SCI USSR (DISSERTATION FOR THE DEGREE OF CANDIDATE IN TECHNICAL SCIENCE)

SO: VECHERNAYA MOSKVA, JANUARY-DECEMBER 1952

V

O

Thermal factors entering casting, structure, and mechanical properties of malleable iron. I. M. Chalka. *Litelnoe Proisvodstvo* 1953, No. 9, 21–3.—Irons of the same compn. were heated to 1400–1600° and cast either directly or after allowing the metal to cool by 150–250° into 10–40 mm. thick plates which were then malleabilized to purely ferritic structure. Tensile strength and elongation of castings dropped with the thickness of plates, while higher casting temp. raised them, particularly when the metal was allowed to cool before casting. Higher initial casting temp. had no effect on the yield point or on the proportional limit. In general, mech. properties of malleable iron are defined by the size of primary grain and of the original dendrites. High overheating followed by cooling before casting produces small dendrites with many branches leading to optimum mech. properties.

J. D. Gat

BRAUN, Mikhail Petrovich, prof., doktor tekhn.nauk; CHAYKA, I.M., dotsent, kand.tekhn.nauk, retsenzent; SOROKA, M.S., red.

[Fracture and brittleness of alloyed structural steel] Izlom i khrupkost' konstruktsionnoi legirovannoi stali. Moskva, Gos. nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1960. 250 p. (MIRA 13:5)

(Steel, Structural--Testing)

KALMYKOV, N.K.; CHAYKA, I.V.

Four-drum polishing machine. Bum. i der. prom. no.2:6-8 Ap-Je '65. (MIRA 18:6)

CHAYKA, Josif

Determination of the parameters of an equivalent four-terminal pass network. Izv. vys. ucheb. zav.; radiotekh. 5 no.2:284-285 Mr-Ap '62. (MIRA 15:7)

1. Kafedra radioelektroniki Voyennoy akademii imeni A.Zapototskogo, Brno, Chekhoslovatskaya Sotsialisticheskaya Respublika.
(Electric networks)

"On the Rational Utilization of Medicinal Substances Available in a Military Unit Pharmacy," by Sr Lt Med Serv K. D. Chayka, Voyenno-Meditsinskiy Zhurnal, No 9, Sep 56, pp 84

"The medical services of military units are provided with a large variety of medicinal substances which make it possible to treat diseases of military personnel effectively and in accordance with the attainments of medical science.

"It must be said with regret, however, that this abudant arsenal of drugs is far from being fully utilized by the medical personnel of the units. The physicians as well as the heads of the pharmacies are at fault. The former frequently limit themselves to the use of ready-made preparations,

failing to prescribe drugs which are more complex but are also more effective, while the latter fail to inform the physicians about the medicinal preparations available at the pharmacies.

"This was the situation in the pharmacy of our unit. Of the 270 preparations available at the pharmacy, only 188, or 69 percent, were being used. Eighty-two preparations, or 31 percent, were not being used at all. Such medicinal substances as strychnine in ampoules, arsenic in ampoules, strophantin in ampoules, ferratin, ferrous lactate, purified sulfur, phytin, cocaine, camphor monobromate, and many others found no practical application and were merely dead stock in the pharmacy.

"In September 1954, a complete list of all the drugs available at the pharmacy was sent to the physicians to inform them of what was available. Brief notes on the various drugs were appended to the list. Subsequently, once a week the head of the pharmacy continued to keep the physicians informed about the drugs which were being prescribed either poorly or not at all. The results were not long in forthcoming. The physicians began to utilize 82 percent of the available preparations, while the inventory of such drugs had to be increased by 13 percent. They began to prescribe such medicinal substances as adoniside, thermopsis, phytin, strophantin in ampoules, potassium bromide. tincture of belladonna, ephedrine in powder form, camphor monobromated, tincture of lily of the valley (in Zelenin drops), chloroform, methyl salicylate ester, oil extract of hyoscyamus, camphorated oil, urotropin, ferratin, ferrous lactate, purified sulfur, ascorbic acid, magnesium peroxide, 25-percent solution of magnesium sulfate, codeine, sancaphen, and nitrofurazone. Such complex preparations as Zelenin drops, penicillin-ephedrine ointment, white precipitate ointment with sulfur for the therapy of sycosis, methyl salicylate ester with camphor and oil extract of hyoscyamus for external use, and a number of others were being compounded at the pharmacy for use in dispensaries and hospitals.

"All these measures made it possible to improve the quality of the therapeutic services provided in dispensaries and hospitals." (U)

Sum '54 1967

Chayka, K. D.

CHAYKA, K.D. slushatel' VI kursa (Leningrad)

Observation of the action of 6-methylthyouracil on the cardiovascular system in patients with thyrotoxicosis. Klin.med. 35 [i.e.34] no.1 Supplement:26 Ja '57. (MIRA 11:2)

1. Iz kafedry gospital'noy terapii (nach. - chlen-korrespondent AMN SSSR prof. N.S.Molchanov) Voyenno-meditsinskoy akademii imeni S.M.Kirova.
(URACIL) (THYROID GLAND--DISEASES)
(CARDIOVASCULAR SYSTEM)

CHAYKA, K.D.

Treatment of peptic ulcer with aprophen. Sov.med. no.3:21-24 '62. (MIRA 15:5)

1. Iz kafedry terapii No.1 dlya usovershenstvovaniya vrachey (nach. - prof. P.I. Shilov) Voyenno-meditsinskoy ordena Lenina akademii imeni S.M. Kirova.

(PEPTIC ULCER) (APROPHEN)

TUMASHEVA, N.I., dotsent; MAZORCHUK, S.G.; PSYUK, S.K.; CHAYKA, K.L.; SHVARTSBURD, A.S.

Antistreptolysin O, antihyaluronidase and cutaneous reactions to antigens in psoriasis and lupus erythematosus. Vest. derm. i ven. 38 no.7:17-21 Jl '64. (MIRA 18:4)

1. Kafedra dermatologii (zav. - dotsent N.I.Tumasheva) Vinnitskogo meditsinskogo instituta.

CHAYKA, L.

Methodological work at a plant. Prof.-tekh. obr. 18 no. 3:28-29 Mr '61. (MIRA 14:4)

1. Nachal'nik otdela podgotovki [redacted] Lys'vanskogo metallurgicheskogo zavoda.
(Ural mountain region—Evening and continuation schools)

Chayka, L. A.

USSR/ Geology - Petrology

Card 1/1 Pub. 46 - 4/11

Authors : Ravich, M. G., and Chayka, L. A.

Title : Differentiated intrusion of trappean formation in the Taymir folding area

Periodical : Izv. AN SSSR. Ser geol. 1, 50 - 64, Jan 1956

Abstract : Description is presented of a unique differentiated stratified intrusion of trappean formation discovered in the Taymir peninsula, USSR. Seven references: 6 USSR and 1 USA (1928-1953). Tables; charts.

Institution : Scientific Research Inst. of Arctic Geology, Leningrad

Submitted : May 3, 1955

RAVICH, Mikhail Grigor'yevich; CHAYKA, Leonid Andreyevich; YELISEYEV, N.A., red.; ANISIMOV, B.A., tekhredaktor

[Small intrusions in the Byrranga Mountains (Taymyr Peninsula)] Malye intruzii khrebta Byrranga (Taimyrskii poluostrov). Leningrad, 1959. 147 p. (Leningrad. Nauchno-issledovatel'skii institut geologii Arktiki. Trudy, vol.88) (MIRA 13:2)

1. Chlen-korrespondent AN SSSR (for Yeliseyev).
(Byrranga Mountains--Rocks, Igneous)

CHAYKA, L.M. (Kuybyshev)

Study of a new ignition network with two inductively coupled coils in the primary circuit. Elektrichestvo no.6:58-62 Je '62. (MIRA 15:6)
(Electric coils)
(Gas and oil engines--Ignition)

L 41050-66 FBD/EWT(l)/EEC(k)-2/T/EWP(k) IJP(c) WG

ACC NR: AP6018456 SOURCE CODE: UR/0051/66/020/006/1088/1089

61
60
B

AUTHOR: Krupenikova, T.; Chayka, M.

ORG: none

TITLE: Lifetime determination for the $2p^53p(2p_4)$ state of neon

SOURCE: Optika i spektroskopiya, v. 20, no. 6, 1966, 1088-1089

TOPIC TAGS: [redacted], gaseous state laser, laser modulation, laser R and D, laser theory, laser emission, electron transition, optic modulator, light modulator, magnetic modulation, laser emission coherence

ABSTRACT: The authors found the lifetime for the $2p^53p(2p_4)$ state in neon to be approximately $0.6 \cdot 10^{-8}$ sec while the bandwidth of this emission is estimated to be 26 Mhz. The deviation of these results from the theoretical values may be explained by the influence of depolarizing collisions. Radiation in a direction perpendicular to the laser axis was measured using a small segment of the laser tube between two Helmholtz coils as the course. The externally applied magnetic field controlled the coherence and hence the amplitude of the laser output. The population of the $2p^53p(2p_4)$ level is due to spontaneous transitions as well as transitions from the $2p^54s(2s_2)$ level caused by the applied field. The latter induced transitions are responsible for the coherence. As the degree of coherence increases, so does the intensity of the ra-

UDC: 535.373.3 : 546.292

Card 1/2

L 41050-66

ACC NR: AP6018456

diation in the direction normal to the laser axis, while the intensity of the conventional, axial beam simultaneously decreases. This phenomenon was used to set up a system for the synchronous detection of the coherent component of $2p^5 3p(2p_4)$ radiation. The effect of the applied dc magnetic field on the magnitude of the detected signal was investigated. The authors thank A. Razumovskiy for assisting in the work. Orig. art. has: 1 figure.

SUB CODE: 20/ SUBM DATE: 28Dec65/ ORIG REF: 002/ OTH REF: 002

Card 2/2

CHAYKA, M.Kh.

Establish standard systems for the melting of ice loads. Elek. i tepl. tiaga 5 no.12:40 D '61. (MIRA 15:1)

1. Nachal'nik 3-go uchastka energosnabzheniya Pridneprovskoy dorogi.

(Electric railroads—Wires and wiring)
(Ice)

CHAYKA, L.A.

Relationship of the chemical and physical properties of rocks. Izv. AN SSSR. Ser. geol. 30 no.3:38-50 Mr '65. (MIRA 18:3)

1. Nauchno-issledovatel'skiy institut geologii Arktiki, Leningrad.

Chayka, M.P.

USSR/Optics - Spectroscopy K-6

Abs Jour : Referat Zhur - Fizika, No 5, 1957, 12996

Author : Kaliteyevskiy, N.I., Chayka, M.P.
Inst : -
Title : Investigation of the Hyperfine Structure of Spectra of Plutonium and Uranium Isotopes.

Orig Pub : Vestn. Leningr. un-ta, 1955, No 11, 121-137

Abstract : See Referat Zhur Fizika, 1956, 17953.

Card 1/1

CHAYKA, M. P

USSR/ Physics - Super fine structure

Card 1/1 Pub. 22 - 13/46

Authors : Kaliteevskiy, N. I., and Chayka, M. P.

Title : Study of the super fine structure of the spectra of plutonium and the isotopes of uranium

Periodical : Dok. AN SSSR 103/1, 49-51, Jul 1, 1955

Abstract : A study of the fine structure of spectra of plutonium and the isotopes of uranium is described. The study was accomplished with the help of a Fabry-Perot interferometer of a very high resolving power coupled with a glass double prism spectrograph or a spectrograph with a flat diffractional grate. Six references: 2 USA, 2 Brit. and 2 Germ. (1946-1954).

Institution : Leningrad State University imeni A. A. Zhdanov

Presented by: Academician A. A. Lebedev, April 16, 1955

CHAYKA, M.P

6512 AEC-tr-2880

THE RATIO OF THE MAGNETIC SPIN AND QUADRUPOLE MOMENTS OF THE NUCLEI U^{233} AND U^{235}. N. I. Kaliteevskii and M. P. Chaika. Translated by L. Bovey from Optika i Spektroskopiya 1, 809-11(1956). 5p.

A reinvestigation was made of the hyperfine structure of the U^{235} lines. The spectrum was excited in a hollow cathode cooled with liquid air, and a Fabry Perot etalon was used. The ratio of the magnetic moments of U^{233} and U^{235} was found to be -1.6 ± 0.1. The ratio of the quadrupole moments was found to be $+0.8 \pm 0.3$. (B.J.H.)

Chayka, M.P.

USSR/Optics - Spectroscopy K-6

Abs Jour : Referat Zhur - Fizika, No 5, 1957, 12995

Author : Kaliteyevskiy, N.I., Chayka, M.P.

Inst : Scientific Research Physics Institute, Leningrad State University, USSR

Title : Spectroscopic Determination of the Nuclear Moments of Cu^{63} and Cu^{65}.

Orig Pub : Optika i spektroskopiya, 1956, 1, No 5, 606-611

Abstract : Using optical spectroscopy methods, an investigation was made of the hyperfine structure of certain spectral lines of the atomic spectrum of copper. The light source was a gas-discharge tube with a hollow cathode, cooled with liquid air, in which were placed specimens of separated isotopes of copper, Cu^{63} and Cu^{65}. The use of separated isotopes made it possible to determine more accurately,

Card 1/2

Сидоров, М.Р.

KULIKOV, Ye.V.; [redacted]

Using interference techniques for measuring low amplitudes of mechanical vibrations. Prib.i tekh.eksp.no.2:131-133 M-O '56. (MLRA 10:2)

1. Leningradskiy gosudarstvennyy universitet im. A.A.Zhdanova.
(Interferometry) (Vibration--Measurement)

Chayka, M.P.

USSR/Optics - Spectroscopy K-6

Abs Jour : Referat Zhur - Fizika, No 5, 1957, 12994

Author : Kaliteyevskiy, N.I., Chayka, M.P.
Inst : -
Title : Optical Schemes for the Investigation of the Hyperfine Structure of Spectral Lines by the Photoelectric Method.

Orig Pub : Vestn. Leningr. un-ta, 1956, No 4, 9-16

Abstract : The authors consider various methods for investigating the hyperfine structure of spectral lines with the aid of a Fabry-Perot interferometer. An interferometer is considered in which the gas pressure between the plates of the standard can be varied (at sufficiently large thickness). In thin Fabry-Perot interferometers one displaces one of the plates, or else the reference ring is made of a piezoelectric, whose thickness changes upon application of potential. A detailed description is given for the optical scheme of the setup, prepared at the

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CHAYKA, M. P.

USSR/Optics - Optical Methods of Analysis. Instruments, K-7

Abst Journal: Referat Zhur - Fizika, No 12, 1956, 35875

Author: Zaydel, A. N., Kaliteyevskiy, N. I., Lipis, L. V., Chayka, M. P., Belyayev, Yu. I.

Institution: Leningrad State University and Institute of Geochemistry and Analytical Chemistry, Academy of Sciences USSR

Title: Spectral Analysis Using the Evaporation Method. I. Principle of the Evaporation Method of Evaporating Admixtures in Vacuum and Certain of Its Applications

Original Periodical: Zh. analit. khimii, 1956, 11, No 1, 21-29

Abstract: A new method was developed for spectroanalysis of low-volatility compounds with small admixtures of volatile contaminations. The analysis method is based on preliminary distillation of the admixtures from the sample and their condensation on the end surface of a cooled copper or graphite electrode. The evaporation of the admixtures is performed in vacuum from a sample, placed inside a graphite crucible, clamped between 2 graphite blocks and heated by

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USSR/Optics - Optical Methods of Analysis. Instruments, K-7

Abst Journal: Referat Zhur - Fizika, No 12, 1956, 35875

Abstract: current from a step-down transformer. The layer of admixtures on the surface of the electrode is then analyzed by ordinary methods of spectral analysis. The sensitivity of the method is quite high and reaches values of approximately 10^{-5}% in the determination of the majority of volatile admixtures. The average squared error of a single determination is 10-20%. It depends on the element to be determined, on its concentration, and on the properties of the substance that is being analyzed. The analysis error can be reduced by rational choice of the internal standard. A discussion is made of the investigation of the fundamentals of the method of spectroscopic method and with the aid of radioactive tracers and of its application to the analysis of pure aluminum oxide.

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51-4-3/25

AUTHOR: Chayka, M.P.

TITLE: Analysis of low-volatile oxides for halogens. (Analiz trudnoletuchikh okislov na galoidy.)

PERIODICAL: "Optika i Spektroskopiya" (Optics and Spectroscopy) 1957, Vol.2, No.4, pp.421-425 (U.S.S.R.)

ABSTRACT: This paper describes a spectral analysis method for determination of fluorine and chlorine impurity content in uranium and thorium oxides. McNally, Harrison and Rowe (6) used a hollow-cathode discharge tube in their analysis for fluorine. A 40 mg sample was placed in the graphite cathode; helium was used as a working gas. From photographic records of the 6856 Å line on supersensitive plates, presence of 10^{-4}% of fluorine in the 40 mg sample could be detected. The present author followed the McNally et al. method. The discharge tube was of glass and water-cooled (a figure shows the construction of the discharge tube). A sample was placed in the hollowed-out cathode (made of iron or steel) which could be easily removed from the discharge tube assembly. The tube was first evacuated and then filled with helium at 1.5 cm Hg pressure. 400-500 V, and up to 225 mA d.c. was supplied to the tube during discharge. The fluorine content was found using the 7037.4, 7128.0, 6856.0 and 6902.5 Å

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Analysis of low-volatile oxides for halogens. (Cont.)

lines. The chlorine content was analysed using the 7547.1 and 7356.6 Å lines. The main difficulties are the complexity of the spectrum of the basic substance (especially uranium) and the high excitation potential (above 10 eV) of halogens compared with the ionization potential of the basic substance (for uranium about 4 eV). The success of the analytical method described here lies in the fact that, under the special conditions in the discharge tube, spectrum of the basic substance (U_3O_8 and ThO_2) was not excited. From a series of tests it appeared clearly that selective evaporation took place in the cathode with evolution of chlorine or fluorine from the whole volume of the powdered sample. This evaporation took place more quickly in thin-walled electrodes since it takes less time to heat thinner electrodes. It is concluded that by a suitable choice of discharge conditions fractional distillation of Cl and F could be achieved, with the basic oxide remaining in solid form and its spectrum absent in the records. Alkali metals, as Cl or F salts, interfere if present in about 0.1% proportion; they do not affect the results in ~0.01% concentrations. If a graphite cathode was used, CO molecular

Analysis of low-volatile oxides for halogens. (Cont.)

bands appeared; for this reason the author used iron or steel cathodes. Also presence of carbon in, say, 0.1% proportion in the sample interferes with the analysis. Dimensions of the cathode may be varied within wide limits. The author used a cylinder with an external diameter of 8 mm, internal diameter 6.5 mm, sample recess of 17 mm depth. To avoid interference from gas impurities, the working gas (helium) was continuously purified by passing through a liquid-air trap containing carbon. Two series of standards were found necessary: one with impurities as medium-volatile salts, the other with impurities as low-volatile salts. One or the other series is used depending on the speed of evaporation of the impurity studied. For medium-volatile substances this method of analysis gives repeatability within 10% and sensitivity of the order of 10^{-4}% which, for 10 mg samples used, corresponds to 10^{-6}g. The total time required for one analysis (including 1 minute exposure) is 5-10 minutes. Post-graduate students R.S.Rubinovich, L.P. Razumovskii and K.I.Petrov took part in this work. There are 1 figure, 3 tables and 13 references (3 of which are Slavic).

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CHAYKA, M. P.

51-4-13/26

AUTHOR: Chayka, M. P.

TITLE: Light-Efficiency of a Spectrometer with a Fabry-Perot Interferometer. (Svetosila spektrometra s interferometrom Fabri-Pero.)

PERIODICAL: Optika i Spektroskopiya, 1957, Vol. III, Nr. 4, pp. 372-379. (USSR)

ABSTRACT: The light-efficiency of a spectrometer is given by its radiant energy flux when the spectrometer is illuminated by a source of unit brightness (luminance), and when the spectral width of slits is also unity. The radiant flux for the Fabry-Perot etalon was given by Jacquinot (Refs. 1, 3) as $E = B\,\tau's\,\pi^2/2R_o$ (Eq. 1). This flux is calculated for a diaphragm whose spectral width corresponds to a resolving power $R_o = 0.7R$, where R is the maximum theoretical resolving power. In Eq. 1 B is the source brightness, τ' is the etalon transparency at the maximum on transmission, and s is the surface area of the etalon plates. Such a radiant flux can be obtained only when the Fabry-Perot etalon is used alone

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Light-Efficiency of a Spectrometer with a Fabry-Perot Interferometer.

without a monochromator. The present paper aims to estimate the radiant energy flux obtainable with a spectrometer using a Fabry-Perot etalon and including a monochromator with a prism or a grating, and to find conditions under which such a spectrometer has the highest efficiency. The efficiency of the spectrometer depends on the properties of the Fabry-Perot etalon and on the optical parameters of other components of the system. Properties of the Fabry-Perot etalon were dealt with in detail by Chabbal (Ref. 4), and are not discussed in this paper. It is assumed that the exit diaphragm of the spectrometer is a circular aperture on the optical axis of the spectrometer, and that the wavelength may be altered by variation of the optical thickness of the Fabry-Perot etalon. The spectrometer is shown in Fig. 1, where (1) is the source of light of brightness B, 3-7 is the monochromator with 5 either a prism or a grating, 9 is the Fabry-Perot etalon, 11 is the exit diaphragm and 12 is the light

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receiver. Under suitable conditions all the energy flux from the monochromator may pass through the diaphragm 11. There are two such conditions: (1) The whole flux leaving the monochromator must fall on the Fabry-Perot etalon. To achieve this the solid angle supported by the etalon at the exit slit of the monochromator must be greater than the solid angle supported by the monochromator prism or grating at the same slit (7 in Fig. 1). The angular relationships of the etalon and the monochromator are shown in Fig. 2. (2) It should be possible to inscribe the image of the monochromator slit in the plane of the diaphragm 11 into the diaphragm circle which supports a solid angle 2 φ (Fig. 3, a). The angular dimensions of the monochromator exit slit and its image are shown in Fig. 4. When the conditions (1) and (2) are satisfied, the light-efficiency of the spectrometer is determined by the efficiency of the monochromator. When the conditions (1) and (2) are not satisfied, the light-efficiency of the spectrometer is determined completely by the efficiency of the Fabry-Perot etalon. Eq. 4 on page 374 is then identical with Eq. 1 on page 372 obtained

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by Jacquinot. When the efficiency of the spectrometer is independent of the efficiency of the monochromator, the latter efficiency may be decreased without affecting the performance of the spectrometer. When the spectrometer is constructed from a given monochromator and a given etalon, then the highest efficiency is obtained by a correct choice of the objective 8 (Fig.1). The diameter of this objective should not be then less than the diameter of the Fabry-Perot plates, and its focal length should satisfy certain specified conditions. The author discusses several special cases: (A) Diameter of the etalon D is equal to the height of the prism or the grating. In this case the arrangement of Fig.1 may be replaced by a simpler set-up with etalon and monochromator forming a single unit (Fig.5). (B) Surfaces of the etalon plates are never perfectly parallel. This imperfection lowers the resolving power of the etalon, and use of a diaphragm to exclude the etalon edges may increase this resolving power.

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(C) When the monochromator has sufficient resolving power to separate out the required spectral interval, the flux obtainable using the monochromator alone, and that obtainable using a spectrometer with a Fabry-Perot etalon which includes this monochromator, are compared. The last case is of practical importance when the spectral line studied is near to some other line. Using a diffraction grating of sufficient resolving power as a monochromator in a Fabry-Perot spectrometer, it is possible to obtain a higher light-efficiency, and the same or even higher resolving power, as by using the grating alone. The light losses in the etalon are discussed in detail by Chabbal (Ref.4), and only qualitatively in the present paper. The author thanks Professors S.E. Frish and A.N. Zaydel for valuable discussions. There are 6 figures, 1 table and 6 references, 2 of which are Slavic.

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Card 5/5

CHAYKA, M. P.

Spectroscopic analysis by the vaporization method. II. Determination of admixtures in thorium and beryllium compounds by vaporization in vacuo. A. N. Zaidel, N. I. Kulitcevskii, L. V. Lipis, and M. P. Chaika (State Univ., Leningrad). *Zhur. Anal. Khim.* 12, 17-22(1957); cf. *C.A.* 50, 15323h.—Fifty-mg. samples of ThO_2 were heated for 60 sec. at 1900° *in vacuo*. The vaporized impurities were collected on a Cu electrode and analyzed spectrographically by the 3 standards method. The sensitivity with which Li, Be, B, Na, K, Mn, Cr, Fe, Co, Ni, Cu, and Zn were thus detd. was 1×10^{-3} – 2×10^{-3}% depending on the element. B in Be was detd. by vaporizing a 30-mg. BeO sample at 1750–1800° for 90 sec. and spectrographically analyzing the driven-off impurities. B was detd. from the line 2496.78 A. In the analysis of B an internal standard, $AuCl_3$, was used. IV. Determination of the degree of condensation of admixtures. Yu. I. Belyaev and A. N. Zaidel (V. I. Vernadskii Inst. Geochem. and Anal. Chem., Acad. Sci. U.S.S.R., Moscow). *Ibid.* 30–40; cf. *C.A.* 51, 7940i. —The effects of geometric factors, temp., duration of vaporization, concn. of sought and extraneous elements, wt. of sample, and other factors on the degree of condensation of admixts. were studied. The degree of condensation K is defined as the ratio of the no. of atoms of an element condensed on the capsule subsequently used as electrode to the no. of atoms of the same element present in the sample before vaporization. This study was carried out with nonvolatile oxides of Be^{7}, Zr^{95}, La^{140}, Th^{227}, U^{237}, and Pu^{239} by using as admixt. radioactive Na^{24}, K^{42}, Tl^{204}, Ni^{63}, Ba^{131}, Zn^{65}, Cd^{115}, Sb^{122}, and Bi^{210}. The degree of condensation was detd. from $k = I/I_0$ where I is the activity of the condensate on the capsule after vaporization and I_0 is the activity